

WE CLAIM:

1. A scale, comprising:
 - a first base body comprising:
 - a first non-magnetizable support; and
 - a first set of magnetic elements that are arranged laterally next to said first non-magnetizable support, are magnetized in a single identical direction and are arranged in a measuring direction;
 - a second base body comprising:
 - a second non-magnetizable support; and
 - a second set of magnetic elements that are arranged laterally next to said second non-magnetizable support, are magnetized in said single identical direction and area arranged in said measuring direction; and
 - wherein said first base body and said second base body are put together such that in said measuring direction alternating ones of said first and second sets of magnetic elements are arranged and said first and second sets of magnetic elements have different magnetic orientations with respect to each other.
2. The scale in accordance with claim 1, wherein said first base body comprises a first set of spaces defined between said first set of magnetic elements and said second set of magnetic elements are inserted into each one of said first set of spaces.
3. The scale in accordance with claim 1, wherein said first and second base

bodies each have an identical geometry and magnetization.

4. The scale in accordance with claim 1, wherein said first set of magnetic elements are arranged on a first set of tracks, wherein said first set of tracks, viewed vertically with respect to said measuring direction, are arranged spaced apart from each other by a space, and wherein said first non-magnetizable support and said second non-magnetizable support are arranged in at least said space.

5. The scale in accordance with claim 4, wherein said first set of tracks are concentric with one another and said first and second non-magnetizable supports are arranged in the form of concentric rings between two of said first set of tracks.

6. The scale in accordance with claim 5, wherein said first and second sets of magnetic elements are magnetized along an axis of symmetry of said scale.

7. The scale in accordance with claim 1, wherein each of said first set of magnetic elements comprises a plastic-bonded hard magnetic material.

8. The scale in accordance with claim 7, wherein said hard magnetic material is defined by the group consisting of neodymium-iron-boron, samarium-cobalt or a ceramic magnetic material.

9. The scale in accordance with claim 1, wherein said first non-magnetizable

support is made of polyamide.

10. The scale in accordance with claim 1, wherein said first non-magnetizable support is made of a castable, non-magnetizable material, and said first set of magnetic elements comprise a castable magnetic material.

11. A method for producing a scale, comprising:

providing a first base body comprising:

a first non-magnetizable support; and

a first set of magnetic elements that are arranged laterally next to said first non-magnetizable support, are magnetized in a single identical direction and are arranged in a measuring direction;

providing a second base body comprising:

a second non-magnetizable support; and

a second set of magnetic elements that are arranged laterally next to said second non-magnetizable support, are magnetized in said single identical direction and are arranged in said measuring direction; and

combining said first base body with said second base body by sticking them together such that in said measuring direction alternating ones of said first and second sets of magnetic elements are arranged and said first and second sets of magnetic elements have different magnetic orientations with respect to each other.

12. The method in accordance with claim 11, wherein said first base body is produced by a dual injection-molding process by injecting a first material constituting said first support onto a second material that constitutes said first set of magnetic elements.

13. The method in accordance with claim 12, wherein said second base body is produced by a dual injection-molding process by injecting a third material constituting said second support onto a fourth material that constitutes said second set of magnetic elements.

14. A position measuring system comprising:

a scale, comprising:

a first base body comprising:

a first non-magnetizable support; and

a first set of magnetic elements that are arranged laterally next to said first non-magnetizable support, are magnetized in a single identical direction and are arranged in a measuring direction;

a second base body comprising:

a second non-magnetizable support; and

a second set of magnetic elements that are arranged laterally next to said second non-magnetizable support, are magnetized in said single identical direction and are arranged in said measuring direction; and

wherein said first base body and said second base body are put together such that in said measuring direction alternating ones of said first and second sets of magnetic elements are arranged and said first and second sets of magnetic elements have different magnetic orientations with respect to each other; and

a scanning element, which is sensitive to a magnetic field, for scanning said first and second sets of magnetic elements.

15. The position measuring system in accordance with claim 14, further comprising:

a second scale;

a reduction gear that drives both said scale and said second scale in a manner in which they are geared down in relation to each other;

a driveshaft coupled to said reduction gear, wherein said position measuring system is a multi-turn angle encoder for measuring an absolute position of said driveshaft over several revolutions.